CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO.R5-2010-____

WASTE DISCHARGE REQUIREMENTS
FOR
SAGE CANYON, LLC
SOMERSTON WINERY
NAPA COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Central Valley Water Board) finds that:

1. Sage Canyon, LLC (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated 26 February 2009 for treatment and land application of wastewater generated at its new wine processing and storage facility known as Somerston Winery. The Discharger submitted additional information on 24 August 2009 and 28 August 2009 in response to the Central Valley Water Board's Incomplete Report of Waste Discharger letter dated 9 June 2009. In the 7 April 2010, *Somerston Winery RWD Response to Comments* was submitted by DJH Engineering (DJH) of Placerville on behalf of the Discharger, proposing a different treatment and storage system. Meetings to discuss the Discharger's proposal were held on 1 March, 15 June and 29 June 2010. DJH submitted further supplemental information to the Central Valley Water Board in June 2010.

2. Somerston Winery ~~comprising of~~is located on a 1,625 acre~~s~~ ranch ~~is located~~ at 3450 Sage County Road (also referred to as E. Highway 128), St. Helena in Napa County (Assessor's Parcel No. 025-270-023 and 026). There are ~~280~~ 208 acres of vineyards. The Discharger plans to ~~irrigate~~ augment water supply with on 204 acres with treated wastewater. The winery and land application areas are within a portion of Township 8 North; Range 4 West, MDB&M. The location of the facility is shown on Attachment A, which is attached hereto and is made part of the Order by reference.

3. The Discharger owns the property where the facility is located. The winery will be a full crushing and bottling facility with a production of 150,000 gallons of wine per year from ~~,~~ 909 tons of grapes per year (based on 165 gallons of wine per ton of grapes), ~~and~~ or 63,000 cases of wine per year (based on 2.4 gallons of wine per case). This capacity is limited by the special use permit and the accompanying CEQA documents.

4. The winery will include a tasting room with a commercial kitchen.

5. Domestic wastewater will be segregated from the winery wastewater and treated with a septic tank and a leach field system regulated by the Napa County Environmental Management Department.

PROPOSED FACILITY

6. The Discharger is proposing a new winery facility that will generate wastewater and residual solids. The treatment process consists of physical and biological processes that will reduce the solids and biochemical oxygen demand (BOD) of the wastewater. A process flow diagram of the Somerston Winery is shown in Attachment B, which is attached hereto and is made part of the Order by reference. The following are the proposed activities planned:

   a. The winery will generate approximately 0.9 million gallons (Mgal) of process wastewater per year. ~~or about 2,466 gallons per day (gpd).~~

   b. The wastewater treatment process includes an influent pumping station, rotary screen, equalization tank, pH adjustment system, self-cleaning fine screen, contact tank, heat exchanger, anaerobic filters, effluent pumping station, final filtration process, and barn pumping station.

   c. Treated wastewater will be pumped to a storage tank for distribution to the vineyards through the existing irrigation system.

7. A water softener is planned for the winery facility.

8. The Land Application Area (LAAs) is comprised of approximately 104 acres (in vines). A site location map depicting the location of the LAAs is shown on Attachment C, which is attached hereto and made part of the Order by reference.

WASTEWATER SYSTEM

9. The following winemaking operations and processes are anticipated to generate wastewater and residual solids: water softener regeneration, crushing, fermentation, pressing, bulk wine storage, barrel storage, spillage, equipment cleaning, screening of process wastewater stream, and accumulated solid settlement at tank bottoms.

   a. Brine flush water generated from the water softener will be stored separately from the winery process wastewater and transported offsite for proper disposal.

   b. All other winery wastewater will be processed in the wastewater treatment system.

10. Winery wastewater is collected in a gravity floor drain system that feeds into an influent pumping station.

11. The wastewater treatment system will include the following components:

   a. Process wastewater is collected in the influent pump station and pumped to an elevated rotary screen. The elevated screen will provide the necessary gradient to allow wastewater to flow by gravity into the equalization tank. Solids from the rotary screen are discharged into a bin for direct disposal in the vineyards as a soil amendment or hauled offsite for proper disposal. Liquid collected in the bin will be reintroduced into the treatment system for additional treatment.

   b. A 13,650 gallon equalization tank will allow a constant flow feed to the anaerobic filters.

c. From the equalization tank, wastewater is pumped through a pH adjustment system. The pH adjustment is provided by an injection of acid and/or potassium hydroxide. An inline pipeline mixer provides the chemical mixing. The pH control system will automatically direct the feed system to change the chemical feed rate to obtain the desired pH range of 6.5 – 7.5. A sample port will be located prior to the fine screening process to monitor the actual adjusted pH.

d. After the pH neutralization process, the wastewater is pumped through an inline filter, contact tank, heat exchanger, and anaerobic filter.

i. The inline filter provides additional screening for the protection of the heat exchanger.

ii. The contact tank provides the required residence time for the chemical mixture prior to the heat exchanger.

iii. The heat exchanger will heat the wastewater to 95 – 100 degrees Fahrenheit prior to the anaerobic filter.

iv. The anaerobic filters are up-flow biofilters, consisting of two 8,050 gallon tanks filled with random plastic media. The media will provide surface area for beneficial bacteria growth and consume the organic matter in the wastewater. Each tank will be provided with a drain to remove solids and a vent that will include a catalytic convertor for treating the off gases (including methane, carbon dioxide, and some hydrogen sulfide) from the system. A gas pilot burner will be operated continuously for those times when gas is produced.

e. Final filtration will be provided by a ~~mixed media, automatic backwash granular filter~~ spin disk filter after the anaerobic process. This will polish the treated wastewater and make it suitable for direct application to the drip irrigation system. Final effluent will be pumped uphill to the storage tank.

f. The storage tank will have a 100,000 gallon capacity. From the tank, effluent will be distributed to the vineyards through the existing irrigation system.

g. Backwash water from the filters and drainage from the treatment processes will drain into the barn pumping station, to be reintroduced into the treatment system for additional treatment.

12. Wastewater generation flow rates for the annual production of 150,000 gallons of wine are presented below.

a. ~~Peak~~ Pprocess wastewater flow is ~~5.5 Mgal per year or~~ 15,000 gpd.

b. Annual process wastewater flow is 0.9 Mgal per year ~~or 2,466 gpd~~.

13. The RWD included estimated monthly wastewater flow rates and anticipated rainfall with a 100-year return frequency. These rates are based on the Saint Helena 6NE, Station No. E30 7649 00 and are provided in the table below.

Month	Units	Monthly Flow	~~100-year Rainfall~~
January	gallons	36,000	~~185,366~~
February	gallons	27,000	~~162,668~~

Month	Units	Monthly Flow	~~100-year Rainfall~~
March	gallons	31,500	~~124,838~~
April	gallons	63,000	~~64,311~~
May	gallons	72,000	~~34,047~~
June	gallons	76,500	~~7,566~~
July	gallons	103,500	~~0~~
August	gallons	108,900	~~0~~
September	gallons	112,500	~~7,566~~
October	gallons	116,100	~~45,396~~
November	gallons	90,000	~~87,008~~
December	gallons	63,000	~~185,366~~
Total	gallons	900,000	~~904,130~~

14. The Discharger has estimated effluent quality and these values are presented in the table below.

Constituents	Units	Concentrations
Electric Conductivity (EC)	umhos/cm	810
Total Dissolved Solids (TDS)	mg/L	510
Sodium	mg/L	5.7
Chloride	mg/L	5.7
Nitrogen	mg/L	<1
Potassium	mg/L	303
Magnesium	mg/L	<1.0
Calcium	mg/L	<0.5

15. The Discharger will use a number of chemicals in the wine-making, processing, cleaning, and sanitation processes at the facility. The future chemicals to be used at the facility are shown in the table below.

Chemical	Chemical Use	Annual Usage
Chem 440	Crush equipment, fermentation and bulk wine tank cleaning	390 pounds
Citric Acid, $C_6H_8O_7$	Crush equipment, fermentation and bulk wine tank cleaning	140 pounds
Peracetic Acid, $C_2H_40_3$	Crush equipment and fermentation tank cleaning	270 gallons
Caustic Potash, KOH	Metal descale cleaning	45 pounds
Sulfur Dioxide, SO_2	Bulk wine tank cleaning	20 pounds
Ozone, O_3	Barrel cleaning	995 pounds

SOURCE CONTROL

16. Future wastewater quality at the Somerston Winery has been estimated based on typical wastewater quality at similar sized wineries. After implementing source control measures, the Discharger anticipates treated wastewater with a TDS concentration of 510 mg/L. The RWD describes the following Best Practicable Treatment and Control (BPTC) measures that have been incorporated into the design of the facility:

a. Replacement of chemicals with more environmentally acceptable substitutes:

   i. Replacement of sodium chloride with potassium chloride for the water softener. The ion exchange process will exchange potassium for magnesium and calcium in the water supply.

   ii. Replacement of sodium hydroxide with potassium hydroxide. Using a potassium-based cleaner rather than a sodium-based cleaner can reduce the amount of TDS that reaches groundwater because plants in the LAAs can take up potassium as a plant nutrient.

   iii. Peracetic acid (PAA) will be used. PAA breaks down to acetic acid, water, and oxygen; it will contribute to alkalinity in the wastewater, but does not contribute sodium, phosphate, or other salts to the wastewater.

b. The water softener regeneration brine will be collected and temporarily stored in a storage tank separate from the winery process wastewater. The brine solution will be collected and transported offsite for disposal by a local septic waste disposal company.

c. Cover ~~C~~rops ~~will be~~ are planted in the LAAs. Crops will take up some of the waste constituents in the treated wastewater.

d. Each process wastewater pump station will be fitted with dual unit capability such that the system will continue to operate at capacity with one unit out of service.

e. In the event of a facility wide power failure, power will be provided for the entire facility from a backup generator.

WATER BALANCE

17. A water balance specific for this design was submitted on 12 June 2010 for the wastewater treatment, storage, and land application system. An irrigation plan was submitted on 29 June 2010. The revised water balance and irrigation plan indicates that the Discharger plans to irrigate the LAAs throughout the year. The Discharger states the following: 1) Irrigation during the months of November and December will simply use up the wastewater generated during those months, 2) Short dry periods during the winter months will allow some irrigation, 3) Historical crop irrigation data shows that no irrigation is necessary during the months of November, December, January and February, 4) Irrigation will occur during November and December at an application rate of 1 gallon per hour per plant or 140,910 gallons per month, 5) A minimum of 10,000 gallons will be left in the storage tank for recycling back into the treatment process, and 6) the storage tank has the capacity to store all of the treated wastewater for the months of January, February, and March. The water balance for the Discharger's wastewater treatment, storage and irrigation plan is shown in the table below.

Month	Estimated Wastewater Flow (gallons)	Irrigation Demand (gallons)	Storage Tank (gallons)	Cumulative Storage Tank (gallons)
October	116,100	2,147,176	10,000	10,000
November	90,000	140,910	10,000	10,000
December	63,000	140,910	10,000	10,000
January	36,000	0	46,000	46,000
February	27,000	0	73,000	73,000
March	31,000	563,679	10,000	10,000
April	63,000	563,679	10,000	10,000
May	72,000	1,127,280	10,000	10,000
June	76,500	2,147,176	10,000	10,000
July	103,500	2,147,176	10,000	10,000
August	108,900	2,147,176	10,000	10,000
September	112,500	2,147,176	10,000	10,000

~~18.Since the crop uptake is limited during the winter months, the Order contains seasonal discharge flow limits.~~

~~19.~~18. The treatment facility is designed for a ~~peak~~ wastewater flow of 15,000 gpd ~~or approximately 450,000 gallons per month~~. The Discharger's water balance shows no disposal by irrigation during the months of January and February~~, as shown in the table below. In addition, the Discharger will not have the amount of storage necessary for peak flows during the winter months. Therefore the Order contains seasonal discharge flow limits derived from the following water balance.~~ During the months of November and December normal irrigation amounts vary considerably. During November and December wastewater application rates will be limited to 1 gallon per plant per month or 140,910 gallons per month. Generally wastewater amounts will be less than 140,000 gallons per month.

~~Month~~	~~Estimated Wastewater Flow (gallons)~~	~~Irrigation Demand (gallons)~~	~~Storage Tank (gallons)~~	~~Cumulative Storage Tank (gallons)~~
~~October~~	~~450,000~~	~~2,147,176~~	~~10,000~~	~~10,000~~
~~November~~	~~45,000~~	~~140,910~~	~~10,000~~	~~10,000~~
~~December~~	~~45,000~~	~~140,910~~	~~10,000~~	~~10,000~~
~~January~~	~~45,000~~	~~0~~	~~55,000~~	~~55,000~~
~~February~~	~~45,000~~	~~0~~	~~100,000~~	~~100,000~~
~~March~~	~~450,000~~	~~563,679~~	~~10,000~~	~~10,000~~
~~April~~	~~450,000~~	~~563,679~~	~~10,000~~	~~10,000~~
~~May~~	~~450,000~~	~~1,127,280~~	~~10,000~~	~~10,000~~

Month	Estimated Wastewater Flow (gallons)	Irrigation Demand (gallons)	Storage Tank (gallons)	Cumulative Storage Tank (gallons)
June	450,000	2,147,176	10,000	10,000
July	450,000	2,147,176	10,000	10,000
August	450,000	2,147,176	10,000	10,000
September	450,000	2,147,176	10,000	10,000

~~20.~~19. The Discharger does not anticipate any contributions of major sources to monthly discharger volumes such as stormwater run-on, any inflow or infiltration from the collection system, or accumulations of rain from a 100-year annual precipitation. All winemaking processes take place within the winery building. Treated wastewater is stored in an enclosed tank. Rainfall simply displaces the ability to irrigate the crop with wastewater.

~~21.~~20. The Discharger does not anticipate any stormwater mixing with wastewater and has submitted a Notice of Non-Applicability (NONA) for compliance with the Industrial Activities No. 97-03-DWQ Storm Water General Permit.

~~22.~~21. Stormwater runoff in the areas surrounding the proposed pretreatment area and winery site improvements will be directed away from the proposed improvements into rock-lined, grass-lined and/or storm water culverts with rock energy dissipaters constructed at the outfall of each conveyance structure.

~~23.~~22. Stormwater runoff from the existing and proposed buildings will be collected and conveyed away from the buildings in storm drain pipes and outlet into a drainage ditch with a rock energy dissipater constructed at the outfall of the storm drain pipe. The drainage ditch flows into Soda Creek and ultimately into Lake Berryessa.

~~24.~~23. Associated with the construction of the new winery building, there is an active Storm Water Pollution Prevent Plan (SWPPP) and Notice of Intent on file (WDID# 228C353570). A revised SWPPP will be submitted to include the construction activities associated with the wastewater pretreatment area and conversion of the existing agricultural building to a winery.

LAND APPLICATION SYSTEM

~~25.~~24. Seven LAAs are available for wastewater application with usable land application acreage totaling 104 acres planted with grape vines. The location of the LAA is presented on Attachment C. A summary of the LAAs is presented below:

LAA	Acreage
Deerhound Vineyards	25.3
Falcon Vineyards	3.1

Celestial Vineyards	10.5
Gauntlet Vineyards	21.7
LAA	Acreage
Julia Vineyards	9.6
Ariel Vineyards	14.8
Kelso Vineyards	19.3
Total	104.3

~~26.~~25. Treated wastewater will be applied by drip system. Pipe conveyance of the treated wastewater to the LAAs are provided on Attachments D, E, and F, which are attached hereto and is made part of the Order by reference. Irrigation operations will be controlled by a work order system, issued by the winemaking and vineyard managers. Work orders will specify irrigation application rates and designate the specific LAAs to receive them. The irrigation pump will be controlled by a timer, allowing the required amount of treated water to be used for irrigation operations and preventing applications in excess of the planned amount. Irrigation operations will be manned at all times.

~~28.~~26. Sprinkler irrigation is provided on the valley floor for frost protection. Wastewater irrigation will be through drip system. ~~except during the fall months where sprinklers can be used to enhance the cover crop. Sprinklers are on timers that prevent over application and subsequent runoff.~~

27. On an annual average basis, treated wastewater will provide approximately 6.9 percent of the total irrigation supply. The annual irrigation need of the vines is approximately 13.0 Mgal. The Discharger anticipates mixing treated wastewater with supplemental irrigation water on an as needed basis during the months of March, April, May, June, July, August, September, ~~and~~ October, November and December. Supplemental irrigation water will be supplied from six water sources including four reservoirs, a sump, and a surface water right from the nearby Soda Creek. The Discharger states that irrigation *during the months of Nov*ember through February will be dependant upon the amount of rainfall received during the year but in any event limited to 1 gallon per plant per month or 140,000 gallons per month.

28. The Order requires the Discharger to submit a *Nutrient Management Plan* to evaluate the nutrient load and irrigation demand for each land application area and develop and implement pollution prevention management practices to restrict nutrient loading that which is necessary for the specified crop.

29. Cover crops are maintained throughout the vineyard that will minimize the migration of constituents applied to the soil surface. Cover crops have not been specified in the RWD and their irrigation and nutrient demand is therefore unknown. The Order

requires the Discharger to include in its *Nutrient Management Plan* a description of the cover crops and its nutrient uptake capacity.

30. The vine crops are expected to remove a portion of the dissolved solids found in the wastewater that will be beneficial to the improvement of the physical properties of the soil and that are essential for plant growth. The RWD and supplemental information submitted by the Discharger stated the following:

    a. Utilizing BPTC measures, TDS concentrations will increase with the addition of potassium. The net application of potassium to the vineyards is estimated to be 24.5 lb/ac/yr. The vines are expected to remove a portion of the potassium, resulting in a TDS concentration less than 390 mg/L. Vines can take up approximately 195 lb/ac/yr of potassium based on information obtained from *The Western Fertilizer Handbook*.

    b. Low concentrations of nitrogen (less than 5 mg/L or less than 1 lb/ac/yr) are anticipated in the wastewater. Based on information obtained from *The Western Fertilizer Handbook*, vines can take up approximately 125 lb/ac/yr nitrogen.

31. TDS is composed of both Volatile Solids (VDS) and Fixed Dissolved Solids (FDS). The proportion of VDS to FDS in wastewater varies with the source, but 50 percent of the TDS in winery wastewater may be in the volatile form. The VDS can be biologically treated by soil microorganisms in a well-managed wastewater treatment and land application system and when wastewater is not over-applied. The Order requires the Discharger to submit a *Site Specific Conditions Workplan and Report* to determine the amount of FDS that crops grown in the LAAs will take up in order to evaluate potential degradation.

SOLID WASTE

32. The organic solid wastes generated in the winemaking process consist of pomace (skins, pulp, and seeds~~, and stems~~) and lees (solids remaining in the unfermented juice and sediment remaining after fermentation). Pomace will be collected in storage bins at the rotary screen. Pomace will be used as a soils condition and supplemental nutrient source to be disced into the vineyards on a daily basis, weather permitting or collected and hauled offsite to an approved disposal or reclamation facility. The lees will be collected onsite and transported to an offsite facility for wine recovery.

33. Solids production is estimated to be 375 tons/year based on the ultimate manufacturing capacity of 150,000 gallons of wine.

GROUND AND SURFACE WATER CONDITIONS

34. Groundwater conditions have been investigated and are limited based on a compilation of ground and surface water analytical data presented in the *Waste Discharge Report, Geology and Hydrogeology* (*Geology and Hydrogeology*) dated 4 August 2009 submitted by Youngdahl Consulting Group, Inc. in El Dorado Hills (Youngdahl) on behalf of the Discharger.

35. The winery is served by a production or supply well called C-1, drilled into a deeper, fractured rock aquifier located on a ridgeline in the eastern corner of the property. The location of well C-1 is presented on Attachment C. Well depth or well construction characteristics were not provided by the Discharger. A water softener will be used to treat the well water prior to use in the winery. The production well was sampled on 19 December 2007 and 20 July 2009. Well water quality is presented in the table below:

Constituent	Units	Concentration 12/19/07	Concentration 7/20/09	WQO
Alkalinity, $CaCO_3$	mg/L	520	510	*
Bicarbonate, HCO_3 (ppb)	mg/L	630	620	*
Boron	mg/L	0.14	0.1	0.7[1]
Calcium	mg/L	1.7	1.3	*
Carbonate[3], CO_3	mg/L	6.0	6.0	*
Chloride	mg/L	6.2	5.2	106[1]
Iron[3,4]	µg/L	0.05	0.08	0.3[2]
Lead[3]	mg/L	5.0	5.0	0.2[2]
Magnesium	mg/L	120	1000	*
Manganese[3]	mg/L	0.005	0.005	0.05
Nitrate[3]	mg/L	2.0	2.0	*
Sodium	mg/L	3.2	2.8	69[1]
TDS	mg/L	510	510	450[1]

WQO denotes Water Quality Objective.
* denotes no value listed for this constituent in the Water Quality Goals.
1 Agricultural Water Quality Level.
2 Primary Maximum Contaminate Level.
3 Non detect, reporting limits shown.
4 Filtered sample.

36. The winery vineyards are irrigated by the following six water sources, of which 5 surface and 1 groundwater samples were collected for analysis.

    a. Charlie 1 and Charlie 2 are reservoirs in the north central portions of the canyon located east of the Deerhound Vineyard.

    b. Big Dam is a reservoir in the northerly canyon located north of the Deerhound Vineyard.

c. Sump is located just below Charlie 1 and was built to collect shallow groundwater located between the Deerhound Vineyard and Charlie 1 Reservoir. A well pump was placed in the sump to create a pumping sump.

d. J&J is a reservoir located southeast of the Julia Vineyard and used to irrigate Kelso and Ariel Vineyards.

e. Area 51 is a surface water right take-out from Soda Creek to irrigate Kelso and Ariel Vineyards. Area 51 pumps from the surface streams and is only viable in the spring.

37. Groundwater conditions were estimated based on a single surface water (SW-1) and groundwater (SW-2) sample collected by Youngdahl and a compilation of analytical data from samples collected in four sampling events from 27 May 2005 to 9 July 2009. The samples were collected from six surface water locations and one shallow groundwater well (SW-2). Sample locations are shown on Attachment C.

a. Surface and groundwater samples collected 9 July 2009 are presented below.

Constituent	Units	Charlie 2 (SW-1)	Well in Field 70-SB (SW-2)	WQO
Chloride	mg/L	14	9.2	106[1]
Ammonia	mg/L	0.10	0.10[2]	*
Nitrite as N	mg/L	0.10[2]	0.10[2]	*
Nitrate	mg/L	0.50[2]	8.2	*
Total Kjeldahl Nitrogen	mg/L	0.37	0.70	*
Sodium	mg/L	17	20	69[1]
TDS	mg/L	480	390	450[1]
Total Coliform	MPN/100	>1600	<1.8	0
BOD	mg/L	4.6	3.6	*

WQO denotes Water Quality Objective. * denotes no value is listed for this constituent in the Water Quality Goals.
[1] Agricultural Water Quality Level.
[2] Non detect, reporting limit shown.

b. Surface water samples collected 6 May 2009 are presented below.

Constituent	Units	J&J	Sump	Big Dam	Charlie 1	Charlie 2	Area 51	WQO
Calcium	meq/L	0.54	1.44	0.97	0.67	0.92	1.65	*
Magnesium	meq/L	3.38	8.62	5.39	8.83	6.37	7.38	*
Sodium	meq/L	0.3	0.7	0.6	0.4	0.6	1.1	69[1]
Carbonate + Bicarbonate	meq/L	4.2	9.9	5.9	9.2	6.8	8.4	*
Boron	mg/L	0.09	0.13	0.22	0.04	0.40	0.51	0.7[1]
Nitrate	mg/L	0.1	0.7	0.6	0.4	0.6	1.1	*
Iron	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	5.0[2]
Manganese	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2[2]
pH	ph units	7.8	7.5	7.8	8.0	7.8	7.8	

WQO denotes Water Quality Objective.* denotes no value is listed for this constituent in the Water Quality Goals.
[1] Agricultural Water Quality Level.
[2] Primary Maximum Contaminant Level.

c. Surface water samples collected 27 May 2005 are presented below.

Constituent	Units	Charlie 1	Charlie 2	Sump	Big Dam	WQO[1]
Calcium	meq/L	0.5	0.7	1.5	1.5	*
Magnesium	meq/L	9.5	10.1	8.9	10.3	*
Sodium	meq/L	0.3	0.4	0.6	0.7	69[1]
Carbonate + Bicarbonate	meq/L	10.2	10.9	10.5	11.5	*
Boron	mg/L	<0.01	<0.01	0.03	0.04	0.7[1]
Nitrate	mg/L	0.3	0.4	0.3	0.5	*
Iron	mg/L	0.11	0.12	0.09	0.05	5.0[2]
Manganese	mg/L	0.03	0.03	0.08	0.01	0.2[2]
pH	ph units	8.7	8.7	8.3	8.7	

WQO denotes Water Quality Objective.* denotes no value is listed for this constituent in the Water Quality Goals.
[1] Agricultural Water Quality Level.
[2] Primary Maximum Contaminant Level.

d. Irrigation Water Source Salinity Data per supplemental data submitted by the Discharger on 24 June 2010

Water Source	EC, umhos/cm	TDS, mg/L
Big Dam	540	346
Charlie 1	750	480
Charlie 2	620	397
Sump	880	563

J&J	370	237
Area 51	800	512
Average	660	422

38. Surface samples show evidence of evaporation and concentration for TDS. Review of the groundwater data presented above indicate that the levels of the analyzed constituents in both the surface and groundwater samples currently meet the agricultural water quality goals, except in the case of coliform bacteria and TDS.

    a. The analysis of the surface water sample collected on 9 July 2009 indicated 1,600 MPN/100 ml for total coliform. No coliform bacteria were detected in the groundwater sample collected on that same day.

    b. TDS concentrations sampled from the winery's production well was 510 mg/L. Samples SW-1 from reservoir Charlie 2 and SW-2 taken from a shallow monitoring well were 480 mg/L and 390 mg/L, respectively. Lake Berryessa has a 205 mg/L average TDS concentration.

39. The *Geology and Hydrogeology* report submitted by Youngdahl, stated the following:

    a. Groundwater depth; gradient; and flow direction is highly variable across the site based on the shallow depth to bedrock and the tightly constrained alluvial channels characteristic of this region.

    b. Groundwater characteristics at any given location are strongly influenced by seasonal rainfall, slope gradient, local permeability, and rock fracture orientations.

    c. Groundwater resources are recharged by seasonal rainfall.

    d. The shallow groundwater can be expected to drain out of the steeper slope areas and collect in the alluvial basins.

    e. Test pit excavations in the alluvial channel show the near-surface solids to be composed of layers of silty sand interbedded with seams of fat clay. It is likely that the shallow groundwater in the alluvial channels is dissected horizontally by locally impermeable aquatards, rather than occurring in a continuous aquifer.

40. Youngdahl does not assert that there is no groundwater or no shallow groundwater or that the presence of groundwater is seasonal. Youngdahl does state in a letter dated 22 June 2010, that the Great Valley Sequence rocks underlying the area of the vineyards in Soda Valley are unlikely to contain significant groundwater resources. The alluvium of Soda Valley contains very limited groundwater that most likely occurs in isolated pockets of porous materials bounded by low permeability sediments.

41. The Discharger states that there is no known groundwater table within the canyon floor or producing supply wells except for areas with springs and shallow flows and therefore requests to waive the groundwater monitoring requirement. The Order requires the Discharger to submit a *Site Specific Conditions Workplan and Report* to present the protocol and methodology for the ongoing verification of the absence of groundwater and the Discharger's antidegradation assertions.

SITE SPECIFIC CONDITIONS

42. Land use in the vicinity of the site consists of vineyards within large areas of native vegetation. The winery is located within the Coast Range Geomorphic Province consisting of a sequence of northwest-trending mountains and valleys, aligned with and adjacent to the California coastline.

    a. The predominant geologic formation in the area is the Lower Cretaceous-Upper Jurrassic Great Valley Sequence, composed of deep marine sediments and turbidite sequences originally deposited off the western margin of the continental shelf. Also found in the region is the Franciscan Formation, a heterogeneous assemblage of oceanic and terrigenous rock units. Field observations of the bedrock exposures at the subject property indicate that the eastern portion of the property is underlain by the Great Valley sequences, with sedimentary beds dipping steeply to the southwest. The bedrock exposures of the Great Valley Sequence were observed to be composed of very closely fractured, moderately to highly weathered beds of gray, fine-grained silts, sands, and clays.

    b. The flat valley floors are composed of silty sands in excess of 80 inches thick. The majority of the steep western edge of the site is composed of silty sand, and the steep eastern edge is composed of clayey sands and silt, both 10 to 20 inches thick. The intermediate slope areas between the valley and the steep ridges are generally composed of fat clay from 10 to15 inches thick and clayey sands and silts from 20 to 40 inches thick.

43. The winery facility is not located within the Federal Emergency Management Agency (FEMA) 100-year flood zone.

44. Based on the Napa County Road and Street Standards, USDA Soil Survey of Napa County for the City of Napa, and the California Climate Data Archive, the mean annual rainfall is approximately 40.0 inches, the 100-year return annual precipitation is 62.4 inches, and the annual evaporation is 61.61 inches. Information was based on the Saint Helena NE, Station No. E30 7649 00.

OTHER CONSIDERATIONS FOR FOOD PROCESSING WASTE

45. Excessive application of food processing wastewater to land application areas can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the shallow soil profile and causing waste constituents (organic carbon, nitrate, other salts, and metals) to percolate below the root zone. It is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and some salinity species will undergo cation exchange with clay minerals, effectively immobilizing them.

46. Loading of BOD should be limited to prevent nuisance conditions. The maximum BOD loading rate that can be applied to land without creating nuisance conditions can vary significantly depending on the operation of the treatment and land application system.

Pollution Abatement in the Fruit and Vegetable Industry, published by the United States Environmental Protection Agency (US EPA Publication No. 625/3-77-0007) (hereafter *Pollution Abatement*), cites BOD loading rates in the range of 36 lbs/acre/day to 600 lbs/acre/day but indicates the loading rates can be even higher under certain conditions. BOD loading rates cannot cause a nuisance.

47. Acidic and/or reducing soil conditions can be detrimental to land treatment system function, and may cause groundwater degradation if the buffering capacity of the soil is exceeded. If soil pH decreases below 5 and the soil remains in a reducing state for prolonged periods, naturally occurring metals (including iron and manganese) could dissolve and degrade underlying groundwater. In practice, prolonged reducing conditions may not occur because: a) the annual cycle of lowered pH during loading with either wastewater or fertilizer is followed by pH recovery during cropping and organic matter cycling and; b) the dose and rest cycling for wastewater application either in spreading basins or using irrigation creates alternate anoxic and aerobic conditions. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops. The soils and underlying groundwater are expected to adequately buffer the discharge.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

48. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins,* Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board. Pursuant to Section 13263(a) of the California Water Code (CWC), waste discharge requirements (WDRs) must implement the Basin Plan.

49. Surface water drainage is to an unnamed creek and Soda Creek that merge near the easterly end of the property ~~which~~ and later intersect~~s~~ Capell Creek, a tributary to Lake Berryessa. The facility is within the Lake Berryessa Hydrologic Subarea (No 512.21), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

50. The beneficial uses of Lake Berryessa are municipal and domestic supply, agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

51. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

52. State Water Resources Control Board (State Board) Resolution No. 68-16 (the Antidegradation Policy) requires that the Regional Water Board, in regulating the discharge of waste, must maintain the high quality of waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g.,

quality that exceeds water quality objectives). Resolution No. 68-16 also requires that waste discharged to high quality waters be required to meet WDRs that will result in the best practicable treatment or control of the discharge. Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for a new discharge and an increase in volume or concentration of waste.

53. The winery is a new facility with construction anticipated to be complete in time for the 2010 grape crush. Groundwater investigation provided limited characterization over a limited part of the facility from a single shallow groundwater monitoring well. Supplemental surface water grab samples representing the current irrigation water source adjacent to the land application areas were also analyzed. Surface and groundwater quality were found to be within water quality objectives, except in the case of coliform bacteria and TDS. Coliform bacteria were present in the one grab surface water sample and it appears to be an isolated case. The current irrigation source water is from the on-site surface water impoundments and had an average TDS concentration of 422 mg/L with a range from 237 mg/L to 563 mg/L. The single groundwater sample had a TDS concentration of 390 mg/L. TDS concentrations found in the winery supply well which is used for making the wine and not irrigation was 510 mg/L, higher than the water quality objectives. Limited degradation of high-quality groundwater by some of the typical waste constituents released with discharge from a winery (after effective source control, treatment, and control) is consistent with maximum benefit to the people of the State at appropriate sites. When allowed, the degree of degradation permitted depends upon many factors (e.g., background water quality, the waste constituent, the beneficial uses and water quality objectives, management practices, source control measures, and waste constituent treatability).

    The Discharger will utilize a treatment process consisting of physical and biological processes to reduce the residual solids and BOD found in winery wastewater. The anaerobic filter tanks filled with plastic media provides a surface area beneficial for bacterial growth and the consumption of the organic matter found in the wastewater. Each tank will be provided with a vent that will treat the off gases including methane, carbon dioxide, and some hydrogen sulfide from the system. The Discharger will practice BPTC measures with respect to salinity issues as described in the Order. The Order imposes effluent limitations and limits land application of wastewater and nitrogen to the agronomic demands of the vineyard. Wastewater application loading rates shall be based on the concentration of waste constituents added to the soil that is approximately equal to the concentrations expected to be taken up by the vines or cover crop.

    The Discharger expects the facility to provide 8 year-round, 2 part-time, and 2 seasonal jobs. Prohibiting discharges pending completion of the new facility could eliminate some or all of the jobs. In addition, it is reasonable to assume that the facility provides an economic benefit to equipment suppliers and transportation companies. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and limited groundwater degradation provided terms of the Basin Plan are met.

    The use of winery wastewater to irrigate crops in place of surface or ground water supplies is a benefit to the people of the State. The Order establishes requirements to

ensure the discharge will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. The Order establishes effluent limitations on BOD, TDS, and total nitrogen that are protective of the beneficial uses of the underlying groundwater and requires the Discharger to submit a *Nutrient Management Plan* and *Site Specific Conditions Workplan and Report* to confirm compliance with the requirements of the Order and quantify any impacts on the underlying groundwater quality. Based on the existing record, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

54. Based on the threat and complexity of the discharge, the facility is determined to be classified 2-B as defined below:

    a. Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short term violation of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."

    b. Category B complexity, defined as, "Any discharger not included above that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units."

55. California Water Code Section 13267(b) provides that: "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports*."

    The technical reports required by the Order and the attached Monitoring and Reporting Program No. R5-2010-____ is necessary to assure compliance with these WDRs. The Discharger owns and operates the facility that generates the waste subject to the Order.

56. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. The data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in the Order.

57. California Department of Water Resources standards for the construction and destruction of groundwater wells is described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards

adopted by the state or county pursuant to CWC Section 13801, apply to all monitoring wells.

58. The discharge meets the criteria for an exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27), based upon the following.

    a. The Regional Water Board has issued waste discharge requirements,

    b. The discharge is in compliance with the Basin Plan. Studies submitted by the Discharger conclude that compliance with effluent limits and management practices in these WDRs will achieve compliance with the Basin Plan. As this facility does not currently exist as proposed in the Order, wastewater characterization and management practices were developed based upon best professional judgment. Groundwater quality was characterized over a limited part of the facility with data from a single shallow groundwater monitoring well. Supplemental surface water grab samples representative of the irrigation water sources were analyzed. The Discharger proposes to use treated wastewater that is of better quality than the existing irrigation water.

        i. The Discharger has prepared an Antidegradation Analysis. Based on the proposed anaerobic treatment process, BPTC measures as specified in the Order, and the nutrient uptake capacity of the vines, TDS concentration in the treated wastewater is anticipated to be less than 390 mg/L.

        ii. The Discharger will have a total of 104 acres of LAAs available for irrigation with treated wastewater.

        iii. The Discharger is required to implement source control in the winery, as described in the Order which will minimize the salinity of the discharge.

        iv. The Discharger is required to submit a *Nutrient Management Plan*.

        v. The Discharger is required to submit a *Site Specific Conditions Workplan and Report.*

    c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

59. Federal regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The Discharger filed a *Notice of Non-Applicability of Coverage under the NPDES General Permit for Discharges of Stormwater* 13 August 2009.

60. A Mitigated Negative Declaration (MND) was approved by the Napa County Conservation, Development & Planning Department on 21 December 2007 for the construction of the winery facility to include an aerated wastewater treatment pond per

the provisions of the California Environmental Quality Act (CEQA). Mitigation measures related to water quality are described below. Compliance with the Order's Prohibitions, Effluent Limitations, and Groundwater Limitations will mitigate the discharge and protect water quality. The following mitigation measures were identified.

a. The Discharger shall submit to the County of Napa Public Works Department a pre and post construction Storm Water Pollutant Elimination Permit for review, approval, and monitoring.

b. The Discharger shall submit a grading plan that includes erosion control measures for the temporary and final cave spoil location.

61. An Addendum to the MND was approved by the Napa County Conservation, Development & Planning Department on 21 June 2010 for the installation of a pretreatment facility and 100,000 gallon above ground storage tank in lieu of an aerated wastewater treatment pond.

62. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of the Order does not create a vested right to continue the discharge.

PUBLIC NOTICE

63. All the above and the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.

64. The Discharger and interested agencies and persons were notified of the intent to prescribe WDRs for this discharge and provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

65. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that pursuant to Section 13263 and 13267 of the California Water Code, Sage Canyon LLC, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, shall comply with the following:

Note: Other prohibitions, conditions, definitions, and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.

A. Discharge Prohibitions:

1. Discharge of wastes, including irrigation tailwater, to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated or partially treated wastewater is prohibited.

3. Discharge of waste classified as "hazardous," defined in Section 20164 of Title 27, CCR, or "designated," as defined in Section 13173 of the CWC, is prohibited.

4. The discharge of wastewater in a manner other than as described in the Order is prohibited.
5. The discharge of treated wastewater other than to the approved LAAs as identified in the Order is prohibited.
6. The discharge of domestic wastewater to the winery wastewater treatment system is prohibited.
7. The discharge of winery wastewater to a domestic wastewater treatment system (septic system) is prohibited.
8. Discharge of stormwater not consistent with the procedures described in the Order, or more stringent measures if developed and adopted by the State or Central Valley Water Board, is prohibited.

B. Discharge Specifications:

1. The annual wastewater discharge shall not exceed ~~15,000 gpd~~1.2 million gallons par year based on 8 gallons of wastewater per gallon of wine produced. ~~as a monthly average for the months of March through October, and shall not exceed 1,500 gpd as a monthly average for the months of November through February. Monthly average flow rates are calculated and based on a period of 30 days.~~
2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the CWC, Section 13050.
3. The discharge shall not cause the degradation of any groundwater.
4. No wastewater constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
5. Wastewater in excess of existing storage during a large flood event may be tanked and held for later onsite treatment and use as irrigation water.
6. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. No physical connection shall exist between wastewater piping and any domestic water supply, domestic/industrial supply well, irrigation water pipeline, or irrigation canal without an air gap or approved reduced pressure device.
9. The wastewater treatment and land application system shall have sufficient capacity to accommodate wastewater flow and seasonal precipitation. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
10. Storage of pomace on areas not equipped with means to prevent leachate generation and infiltration into the ground is prohibited.

11. If generated, all water softening ion exchange regeneration brine shall be separated from the wastewater system and disposed of at a permitted facility.

C. Effluent Limitations:

1. Treated wastewater applied to land shall not exceed the following effluent limits (after plant uptake), or other to ensure compliance with the Groundwater Limitations.

Constituent	Units	Daily Maximum	Monthly Average	Annual Average
Biochemical Oxygen Demand	lbs/ac/day	300	NA	NA
Total Dissolved Solids	mg/L	750~~510~~	NA	~~NA~~510
Total Nitrogen	lbs/ac/year	NA	NA	35

NA denotes Not Applicable.

2. Wastewater applied to the LAA shall not have a pH of less than 4.5 or greater than 10.0.

D. Land Application Area Requirements:

1. The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications and Effluent Limitations.
2. Crops shall be grown on the LAAs. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, consumptive use of water, and irrigation requirements. Cropping activities shall be sufficient to take up the nitrogen applied, and crops shall be harvested and removed from the land at least on an annual basis.
3. Pomace shall not be stored on unpaved ground. Acceptable alternatives include storage on paved areas that are equipped with liquid collection systems or other alternatives that prevent generation of leachate, such as roofed areas or use of agricultural bags for well-drained materials.
4. Discharge of treated wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the approved LAAs. Treated wastewater application using sprinklers or drip irrigation is acceptable if the discharge complies with all requirements of the Order.
5. Hydraulic loading of treated wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the potential impact to groundwater quality by percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
6. Wastewater conveyance lines shall be clearly marked as such. Wastewater controllers, valves, etc. shall be affixed with reclaimed water warning signs; quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only.

~~7.Irrigation systems shall be labeled as containing reclaimed wastewater. If treated wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable/irrigation water supply.~~

~~8.Application of treated wastewater to the LAAs using sprinkler irrigation is prohibited when wind velocities exceed 30 miles per hour.~~

~~9.Public contact with wastewater shall be precluded through such means as fences, signs, and/or irrigation management practices. Signs with proper wording of sufficient size shall be placed at areas of access and around the perimeter of the LAAs to alert the public of the presence of wastewater.~~

~~10.~~7. The LAAs shall be managed to prevent breeding of mosquitoes. More specifically:

a. All applied irrigation water must infiltrate completely within 24 hours.

~~b.Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.~~

~~c.~~b. ~~Low pressure pipelines, unpressurized pipelines, and ditches that are accessible to mosquitoes shall not be used to store~~ wastewater.

~~11.~~8. The application of treated wastewater to the LAAs shall comply with the following setback requirements:

Setback Definition	Minimum Irrigation Setback (feet)
~~Edge of land application area[2] to public property boundary (e.g. street)~~	~~50[1]~~
Edge of land application area[2] to any surface watercourse	50[3]
~~Edge of land application area[2] to any properties with an occupied residence~~	~~50~~
Edge of land application area[2] to any industrial or irrigation well	50[3]
~~Edge of land application area[2] to domestic well~~	~~100[3]~~

[1] Additional setbacks may be needed to comply with other requirements of the Order.
[2] As defined by the wetted area produced during irrigation.
[3] Unless otherwise approved by the Executive Officer.

~~12.~~9. Discharges to LAAs shall be managed to minimize both erosion and runoff from the irrigated area.

~~13.~~10. The resulting effect of the wastewater discharge on the soil pH shall not exceed the buffering capacity of the soil profile and shall not cause significant mobilization of soil constituents such as iron and manganese.

~~14.~~11. The Discharger may not discharge effluent to the LAAs within 24 hours of a predicted storm event, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated.

~~15.~~12. All applied wastewater must infiltrate before the next irrigation event using wastewater and there shall be no pooling or ponding of irrigated wastewater.

E. Solids/Sludge Disposal Requirements:

1. Collected screenings and other solids removed from winery wastewater shall be spread in the vineyard s or disposed of offsite in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR and approved by the Executive Officer.
2. Winery sludge and other solids shall be removed from sumps, screens, tanks, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Winery solids drying operations, if any, shall be designed and operated to minimize leachate generation and prevent the infiltration of leachate into the subsurface. .
3. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer at least 90 days in advance of the change.

F. Groundwater Limitations:

1. Effective immediately as groundwater limitation, the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than existing background water quality or water quality objectives. Background groundwater quality shall be established using the methods proposed in the *Site Specific Conditions Workplan* and approved by the Executive Officer. Background values must be updated annually as described in the MRP. The groundwater quality objectives are presented below:

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
TDS	mg/L	450[1]
Total Nitrogen	mg/L	10
Nitrate (as N)	mg/L	10
Ammonia (as NH_4)	mg/L	1.5
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

[1] A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

G. Provisions:

1. All of the following reports shall be submitted pursuant to CWC Section 13267, and prepared by a California registered professional as described in Provision G.2.

a. **Within 60 days of completion of the proposed process wastewater management system and prior to the disposal of applying any wastewater to land**, the Discharger shall submit and implement an *Operation and Management Plan* (*O&M Plan*) that addresses operation of the wastewater treatment and disposal facility. At a minimum, the *O&M Plan* will describe (a) the daily operation and maintenance of the treatment system, (b) the practices used to treat the wastewater within limits specified in the Order, (c) the locations of the LAAs, irrigation protocols for the LAAs, practices used to maintain the LAAs, and management practices to prevent excessive BOD, nitrogen, or dissolved solids loading of LAAs, (d) the locations of flow and effluent sampling points, (e) quality control sampling procedures necessary to obtain representative samples, (f) the locations of solid waste disposal areas, methods of disposal, and the daily practices associated with the disposal of solid waste, (g) means to secure the LAAs and control wastewater or stormwater from discharging offsite (i.e., installation of fencing or notification signs, installation of berms to prevent runoff, configuration of checks to control application rates), (h) planning for potential response to natural disasters, (i) institutional controls such as Best Management Practices (BMPs), (j) Standard Operating Procedures (SOPs), (k) specific procedures to ensure that contaminated stormwater is discharged to the wastewater treatment system and clean stormwater is managed as part of the facility's Storm Water Prevention Pollution Plan, and (l) employee orientation and training. A copy of the *O&M Plan* shall be kept at the facility for reference by operating personnel and they shall be familiar with its contents.

b. By **1 April 2011**, The Discharger shall submit and implement the *Nutrient Management Plan* that demonstrates compliance with the Order. The plan shall evaluate the nutrient load and irrigation demand for each LAAs and develop and implement pollution prevention management practices to restrict nutrient loading that which is necessary for the specified crop. The workplan shall include but not limited to identifying appropriate protocols for application of any supplemental fertilizer and a description of the harvested and cover crops including their nutrient uptake capacities.

c. By **15 February 2016**, the Discharger shall have completed and be implementing the necessary measures as identified as part of the workplan described below:

   i. By **1 June 2011**, the Discharger shall submit for review and approval by the Executive Officer a *Site Specific Conditions Workplan* that shall present the protocol and methodology for the ongoing verification of the absence of groundwater and the Discharger's antidegradation assertions. The workplan shall also describe an alternative method of verifying that irrigation with treated wastewater will not cause degradation of the underlying groundwater and/or an overload of nutrients in excess of the planted crops uptake capacity using identified site specific data. The workplan shall determine the constituents that may cause degradation and the amount of TDS, FDS, and nitrogen that crops grown in the LAAs will take up in order to prevent or mitigate potential degradation. The study shall be completed over a number of process and

growing seasons and propose site specific objectives for each constituent in the applied wastewater with the potential to cause degradation.

ii. By **15 February 2016**, the Discharger shall submit a *Site Specific Conditions Report* that provides the results of the *Site Specific Conditions Workplan.* The report shall present and summarize all data taken and analyzed to verify the absence of groundwater and the Discharger's antidegradation assertions. The report shall include a description and rationale of the selected monitoring protocol to verify compliance with the Order, and a summary of all data taken and analyzed to confirm irrigation with treated wastewater has not degraded groundwater and limits "storage" of waste constituents in the soil for long-term sustainability. The report shall present a summary of the dissolved solids and nitrogen loading rates of the wastewater applied to the specific LAAs for the duration of the study. The report shall describe the pollution prevention management practices that have been implemented to restrict nutrient loading to that is necessary for the specified crop.

2. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology, shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2010-____, which is part of the Order, and any revisions thereto as ordered by the Executive Officer.

4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of the Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

5. In the event of any change in control or ownership of the facility or wastewater disposal areas, the Discharger must notify the succeeding owner or operator of the existence of the Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under the Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with the Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or

disapproved by the Executive Officer.

6. The Discharger shall submit to the Central Valley Water Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specified schedule date and task. If noncompliance is reported, then the Discharger shall state the reasons for noncompliance and shall provide a schedule to come into compliance.
7. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to Section 313 of the "Emergency Planning and Community Right to Know Act of 1986."
8. The Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
9. The Discharger must comply with all conditions of the Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of the Order.
10. A copy of the Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
11. The Central Valley Water Board will review the Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **DATE**.

PAMELA C. CREEDON, Executive Officer